

# Course Title:

## System Analysis and Design (BIT 253)

*BIT 4<sup>th</sup> semester-Tribhuvan University (TU)*

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# Unit-2

# Planning

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# ❑ Introduction to Planning

- The first phase of SDLC is planning, consisting of the project identification and selection, and project initiation and planning activities.
- *It means that the principle work of planning phase of SDLC is conducted in two phases:*
  - ✓ First, Project identification and selection.
  - ✓ And, Project initiation and planning.

## ❑ Identifying and Selecting Systems Development Projects

- During project identification and selection, a senior manager, business IS manager or a steering committee identifies and assesses all the possible system development projects that an organization unit could undertake.
- *Project identification and selection process consists of the following three primary activities:*

### ❖ Identifying potential development projects

#### ➤ This can be performed by:

- ✓ A key member of top management either CEO of a small or medium – sized organization or a senior executive in a larger organization.
- ✓ A steering committee composed of a section of managers with an interest in the system.
- ✓ The development group of senior IS managers.
- ✓ User departments, in which either the head of requesting unit or committee from the requesting unit decides which process to submit.

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### ❖ Classifying and ranking IS development projects

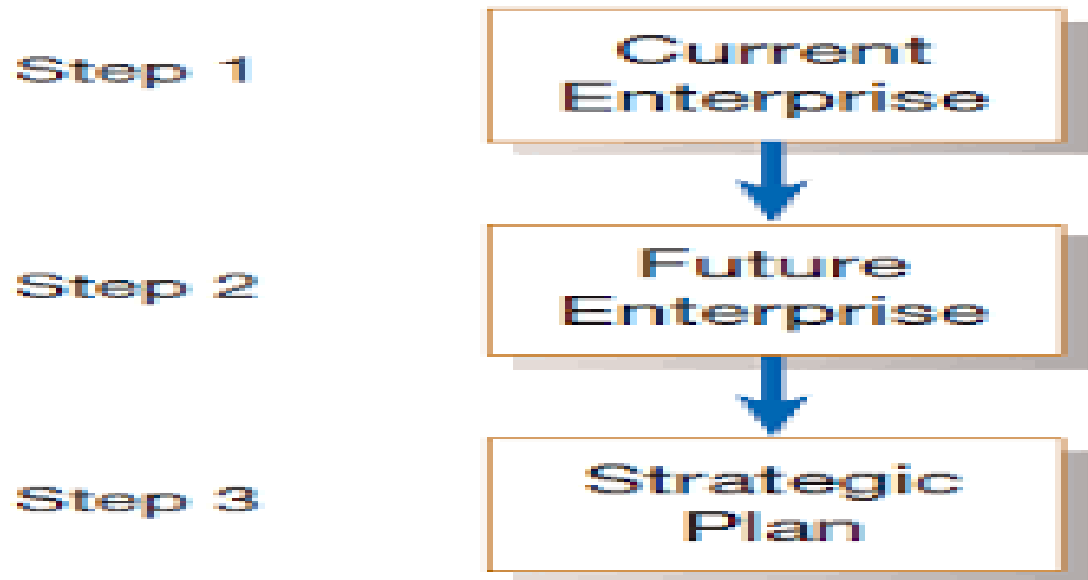
- The second major activity in the project identification and selection process focuses on assessing the relative merit of potential projects.
- As with the project identification process, classifying and ranking projects can be performed by the top managers, a steering committee, business units, or the IS development group.

### ❖ Selecting IS development projects

- The final activity in the project identification and selection process is the actual selection of projects for further development.
- Project selection is a process of considering both short and long – term projects, and selecting those most – likely to achieve business objectives.
- Additionally, as the business condition changes over time, the relative importance of any single project may change. This makes project identification and selection process an ongoing activity.

# ❑ Corporate Strategic Planning (CSP)

- It is an ongoing process that defines the mission, objectives, and strategies of an organization.
- Moreover, the process of developing and refining the models of current and future enterprise as well as a transition strategy after, is referred as corporate strategic planning.



**Fig: Corporate Strategic Planning  
is a 3 – step Process**

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## ❖ Current Enterprise

- This step is the first step of corporate strategic planning, and it focuses on gaining an understanding of the current enterprise.

## ❖ Future Enterprise

- This is the second step of corporate strategic planning, in which top level management must determine where the enterprise to be in the near future.

## ❖ Strategic Planning

- This is the third and final step of corporate strategic planning.
- It means that finally after gaining an understanding of the current and future enterprise as well as transition strategies, a strategic plan can be developed to guide this transition for an effective and a fruitful outcome.

# ❑ Information Systems Planning (ISP)

- The second planning process that can play a significant role in the quality of project identification and selection decisions is called ISP.
- In other words, an ISP means of assessing the information needs of an organization and technologies that will be best to satisfy those needs.
- *The three key activities of this modelling process are represented in the following figure:*



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# Information Systems Planning Three-Step Process

Step 1

### Current Situation:

- listing of manual & automated processes
- listing of manual & automated data
- technology inventory
- human resources inventory



Step 2

### Future Situation:

- blueprints of manual & automated processes
- blueprints of manual & automated data
- technology blueprints
- human resources blueprints



Step 3

### Schedule of Projects:

Electronic Commerce  
Payroll Maintenance  
Job Tracking  
Corporate Intranet



## ❑ Process of Initiating and Planning IS Development Projects

- *Project initiating and planning (PIP)* process describes several techniques that are used when performing the project development process.
- Project initiation focuses on the activities designed to assist in organizing a team to conduct project planning.
- Whereas project planning, the second activity in the PIP process focuses on assessing the IS needs of entire organization.
- So, we can say that project planning is the process of defining clear, discrete activities, and the works needed to complete each activity within a single IS project development process.

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## ❖ Elements of Project Initiation

- *Establishing the project initiation team.*
- *Establishing a relationship with the customer.*
- *Establishing a project initiation plan.*
- *Establishing management procedures.*
- *Establishing the project management environment and workbook.*
- *Developing the project charter.*

# Contd. ....

## ❖ Elements of Project Planning

- *Describing project scope, alternatives and feasibility.*
- *Dividing the project into manageable tasks.*
- *Estimating the resources and creating a resource plan.*
- *Developing a preliminary schedule.*
- *Developing a communication plan.*
- *Determining project standards and procedures.*
- *Identifying and assessing risks.*
- *Creating a preliminary budget.*
- *Developing the project scope statement.*
- *Setting a baseline project plan (BPP).*

# ❑ Assessing Project Feasibility

- The aim of feasibility study is to determine whether developing the system is financially or technically feasible or not.
- The feasibility analysis involves the analysis of the system and collection of data which would be input to the system.
- *The collected data are analysed to arrive at the followings:*
  - ✓ An abstract definition of the problem.
  - ✓ Formulation of the different solution strategies.
  - ✓ Examination of alternative solution strategies and their benefits.
  - ✓ A cost – benefit analysis (CBA) is performed to determine which solution is the best.
- *There are various types of feasibility study and some major of them are discussed below:*

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## ❖ Technical Feasibility

- This assessment focuses on the technical resources available to the organization.
- It helps organization to determine whether the technical team is capable of converting the ideas into the working systems.
- Technical feasibility also involves the evaluation of the hardware, software and other technology requirements of the proposed system.

## ❖ Operational Feasibility

- This assessment involves undertaking a study to analyse and determine whether and how well the organizational needs can be met by completing the project.
- It also studies and analyses how a project plan satisfies the requirements identified in the requirement analysis phase of the system development.

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## ❖ Economic Feasibility

- This assessment typically involves a cost – benefit analysis (CBA) of the project, helping the organization determine the liabilities, costs and the benefits associated with a project before the financial resources are allocated.

## ❖ Schedule Feasibility

- This is the most important assessment for the success of the project; after all, a project will fail if not completed in time.
- In schedule feasibility, an organization estimates how much time the project and its corresponding activities will take to complete.
- Generally, Gantt chart is prepared and constructed in order to forecast the view of the schedule feasibility.

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## ❖ Legal and Contractual Feasibility

- This assessment investigates whether any aspect of the proposed project conflicts with legal requirements like zoning laws, data protection acts, or social media laws.
- Let's say, an organization wants to construct a new office building in a specific location. Here, a feasibility study might reveal the organization's ideal location is not zoned for this type of business.

## ❖ Political Feasibility

- This assessment involves understanding how key stakeholders within the organization view the proposed system.
- This is because an information system may affect the distribution of information within the organization, and thus the distribution of power, the construction of an IS can have political issues.
- Those stakeholders not supporting the project may take steps to block, disrupt, or change the project's intended focus or target.



## ❑ Building and Reviewing the Baseline Project Plan (BPP)

### ❖ Building the Baseline Project Plan (BPP)

- All the information collected during project initiation and planning is collected and organized into a document called the BPP.
- Once the BPP is completed, a formal review of the project can be conducted with the customers.
- The focus of the walkthrough is to verify all information and assumptions in the baseline plan before moving ahead with the project.
- *An outline of a baseline project plan (BPP) consists of the following four major sections:*
  - ✓ *Introduction section*
  - ✓ *System description section*
  - ✓ *Feasibility assessment section*
  - ✓ *Management issues section*

# Contd. ....

## ✓ Introduction Section

- The purpose of the introduction section is to provide a brief overview of the entire document and outline a recommended course of actions for the project.
- The entire introduction section is often limited to only few pages. Actually, it provides a summary of important findings from the planning process and recommendations for the subsequent activities.

## ✓ System Description Section

- The second section of the BPP i.e. the system description section, contains an outline of possible alternative solutions in addition to the one regarded must be appropriate for the given situation.

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### ✓ Feasibility Assessment Section

- In the third section of the BPP feasibility assessment, issues related to the project cost and benefits, technical difficulties, and other such concerns are outlined.
- This is also a section where high – level project schedules are specified using Gantt chart and network diagrams.

### ✓ Management Issues Section

- The final section of the BPP, the management issues section, outlines a number of managerial concerns related to the project.
- This will be a very short section if the proposed project is going to be conducted exactly as prescribed by the organization's standard system development methodologies.

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### ❖ Reviewing the Baseline Project Plan (BPP)

- The objectives of the review of the BPP is to ensure that the proposed system conforms to the organizational standards, and that all the relevant parties understand and agree with the information content in the BPP.
- This review takes place before the BPP is presented to a project approval body.
- A common method for performing this review technique is called a structured walkthrough.
- A walkthrough is a peer group of review of any products created during the system development process.
- *The walkthrough activities are performed by the following individuals:*
  - ✓ *Coordinator, presenter, user, secretary, standards bearer, and maintenance oracle.*

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### ✓ Coordinator

- This person plans the meeting and facilitates a smooth meeting process.

### ✓ Presenter

- This person describes the work products to the group.

### ✓ User

- This person (or group) makes sure that the work product meets the needs and requirements of the project's customer. This user would usually be someone, not one of the project team.

### ✓ Secretary

- This person takes notes and records of decisions or recommendations made by the group.

## Contd. ....

### ✓ Standards Bearer

- The role of this person is to ensure that the work product adheres to the organizational technical standards.

### ✓ Maintenance Oracle

- This person reviews the work products in terms of future maintenance activities. The goal, here, is to make the system and its documentation easy to maintain.

## BASELINE PROJECT PLAN REPORT

### 1.0 Introduction

- A. Project Overview—Provides an executive summary that specifies the project's scope, feasibility, justification, resource requirements, and schedules. Additionally, a brief statement of the problem, the environment in which the system is to be implemented, and constraints that affect the project are provided.
- B. Recommendation—Provides a summary of important findings from the planning process and recommendations for subsequent activities.

### 2.0 System Description

- A. Alternatives—Provides a brief presentation of alternative system configurations.
- B. System Description—Provides a description of the selected configuration and a narrative of input information, tasks performed, and resultant information.

### 3.0 Feasibility Assessment

- A. Economic Analysis—Provides an economic justification for the system using cost-benefit analysis.
- B. Technical Analysis—Provides a discussion of relevant technical risk factors and an overall risk rating of the project.
- C. Operational Analysis—Provides an analysis of how the proposed system solves business problems or takes advantage of business opportunities in addition to an assessment of how current day-to-day activities will be changed by the system.
- D. Legal and Contractual Analysis—Provides a description of any legal or contractual risks related to the project (e.g., copyright or nondisclosure issues, data capture or transferring, and so on).
- E. Political Analysis—Provides a description of how key stakeholders within the organization view the proposed system.
- F. Schedules, Time Line, and Resource Analysis—Provides a description of potential time frame and completion date scenarios using various resource allocation schemes.

### 4.0 Management Issues

- A. Team Configuration and Management—Provides a description of the team member roles and reporting relationships.
- B. Communication Plan—Provides a description of the communication procedures to be followed by management, team members, and the customer.
- C. Project Standards and Procedures—Provides a description of how deliverables will be evaluated and accepted by the customer.
- D. Other Project-Specific Topics—Provides a description of any other relevant issues related to the project uncovered during planning.



# ❑ Cost-Benefit Analysis (CBA)

- The most common way of carrying out an economic assessment of a proposed IS is by comparing the expected costs of development and operation of the system with benefits of having it in place.
- CBA measures costs and benefits to the community of adopting a particular course of action. For example: constructing a dam, by-pass, etc.
- CBA is a decision-making device for evaluating activities that are not priced by the market.
- CBA attempts to simulate a market result in areas where the market does not operate to establish prices.



# Contd. ....

## ✓ CBA Issues

- Is the project worthwhile financially?
- Is it the best option?
- Should it be undertaken at all?
- There might be more candidate projects that can be undertaken at any one time and in any case, projects will need to be prioritized so that any scarce resource may be allocated effectively, etc.

# Contd. ....

## ✓ Steps in CBA

- *The standard way of evaluating the economic benefits of any project is to carry out a cost-benefit analysis, which consists of the following two steps:*
  - *Identifying and estimating all of the costs and benefits of carrying out the project and operating the system.*
- This includes the development costs, the operating costs and the benefits that are expected to accrue from the operation of the system.
- Where the proposed system is replacing an existing one, these estimates should reflect the costs and benefits due to the new system.

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- *Expressing these costs and benefits in common units.*
- We need to evaluate the net benefit (the difference between the total benefit accruing from the system and the total cost of creating and operating the system).
- To do this, we must express each cost and each benefit in **monetary terms** i.e. the fundamental common unit of measurement is **money**.

# ❑ Types of Costs

- *Costs are relatively easier to quantify in approximate monetary terms as follows:*

## ✓ Development costs

- Includes the salaries and other employment costs of the staff involved in the development project and all associated costs.

## ✓ Setup costs

- Includes the cost of putting the system into place. These consist mainly of the costs of any new hardware and additional equipment, but will also include costs of file conversion, recruitment and staff training.

## ✓ Operational costs

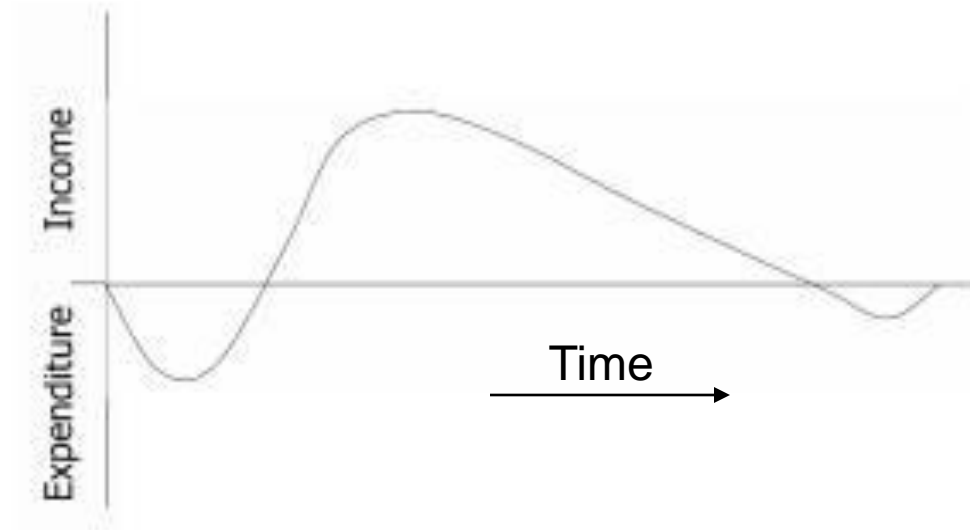
- Consists of the costs of operating the system once it has been installed.

# ❑ Types of Benefits

- *Benefits are often quite difficult to quantify in approximate monetary terms as follows:*
- ✓ Direct benefits
  - These accrue directly from the operation of the proposed system. For example: reduction in salary bills through the introduction of a new, computerized system.
- ✓ Assessable indirect benefits
  - These are generally secondary benefits such as increased accuracy through the introduction of a more user-friendly screen design where we might be able to estimate the reduction in errors, and hence costs, of the proposed system.
- ✓ Intangible benefits
  - These are generally longer term or benefits that are considered very difficult to quantify. Enhanced job interest can lead to reduced staff turnover and, hence, lower recruitment costs. For example: increased organizational transparency and responsibility, improved customer response, goodwill of the organization, etc.

# ❑ Cash Flow Forecasting

- As important as estimating the overall costs and benefits of a project is the forecasting of the cash flows that will take place and their timing.
- A cash flow forecast indicates when expenditures and incomes will take place as shown in the below figure:



**Fig:** Typical product life cycle cash flow

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- Typically products generate a negative cash flow during their development followed by a positive cash flow over their operating life. There might be decommissioning costs at the end of a product's life.
- It is vital to have some forecasts of when expenditures such as the payment of salaries and bank interest will take place and when any income is to be expected, such as payment on completion or possibly staged payments.
- Accurate cash flow forecasting is not easy as it generally needs to be done early in the project's life cycle.
- While estimating the future cash flows, it is usual to ignore the effects of inflation as this increases the uncertainty of forecasts.

# ❑ Cost-Benefit Evaluation Techniques

- Net profit (NP)
- Payback period (PBP)
- Net present value (NPV)
- Profitability Index (PI)
- Return on investment (ROI) / Accounting rate of return (ARR)  
/ Average rate of return (ARR)
- Internal rate of return (IRR)
- Break-Even Analysis (BEA) / Break-Even Point (BEP)